

Quarterly Report
Covering January 1, 2006 to March 31, 2006
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Project Title

Warm Water Species Fish Passage in Eastern Montana Culverts

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Introduction

This progress report covers work completed between January 1, 2006 and March 31, 2006. Work on the project during this period has been primarily devoted to the evaluation of field data that was collected in 2005 and alterations to the experimental design based on that evaluation.

Project Objective

Culverts are a common and often the most cost effective means of providing transportation intersections with naturally occurring streams or rivers. Fish passage and fish habitat considerations are now typical components of the planning and design of waterway crossings. Many culverts in Montana span streams that support diverse fisheries. The health of these fisheries is an essential element of a recreational industry that draws hundreds of thousands of visitors to Montana annually. Additionally, there is growing recognition of the value of native Montana species, some of which are considered 'species of special concern' in the state. In recent years these concerns have become apparent for warm water species in low gradient, high sediment bearing, intermittently flowing streams that are typical of eastern Montana.

Transportation system planners, designers and managers recognize that fish passage through Montana's culverts is a concern. However, there is much contention concerning the impact that a culvert can have on a fishery. Recent basin-wide studies of various trout species that we conducted in western Montana indicate that the tools that some planners and designers promote for forecasting fish passage concerns may be overly conservative. Which species, life stages, and how many individuals must have fish passage access for how long, are questions that are often brought forward during discussions on the design and retrofitting of culverts to accommodate fish passage concerns. *The problem is that for warm water fish species and settings in eastern Montana, the timing and number of fish that must pass a culvert to maintain viable species diversity in the watershed is unknown, and the physiologic abilities of these species relative to such common fish passage questions are often unknown.*

Progress

After reviewing preliminary field data from 2005, the experimental design for mark-and-recapture trials was altered to that shown below.

First, block nets are placed at cross section A, D and G. Then fish are seined from B to A and from E to D. These fish are combined, and then separated to arrive at two equal samples with respect to species and size distribution. Each sample will be marked distinctly using VIE tags. One sample will be deposited just upstream of the net at D and the other sample will be deposited just upstream of the net at G. At times of 1, 2 and 3 days after the fish are deposited, sections B-A and E-D are seined again. Marked fish in these samples are noted and cataloged. Minor adjustments to reach lengths may be necessary to accommodate local conditions, but the same general scheme will be used for each mark-and-recapture experiment at each culvert (6 culverts on Clear Creek and 3 culverts on Sand Creek).

Larry Sickerson, the MDT biologist having responsibility for the project area visited with the project team in February, 2006. Mr. Sickerson concurred with these alterations to the experimental design. Larry also suggested adding a couple of culverts on other creeks in the area, even if these amount to one-time trials. Other sites in the vicinity are available and will be selected soon.

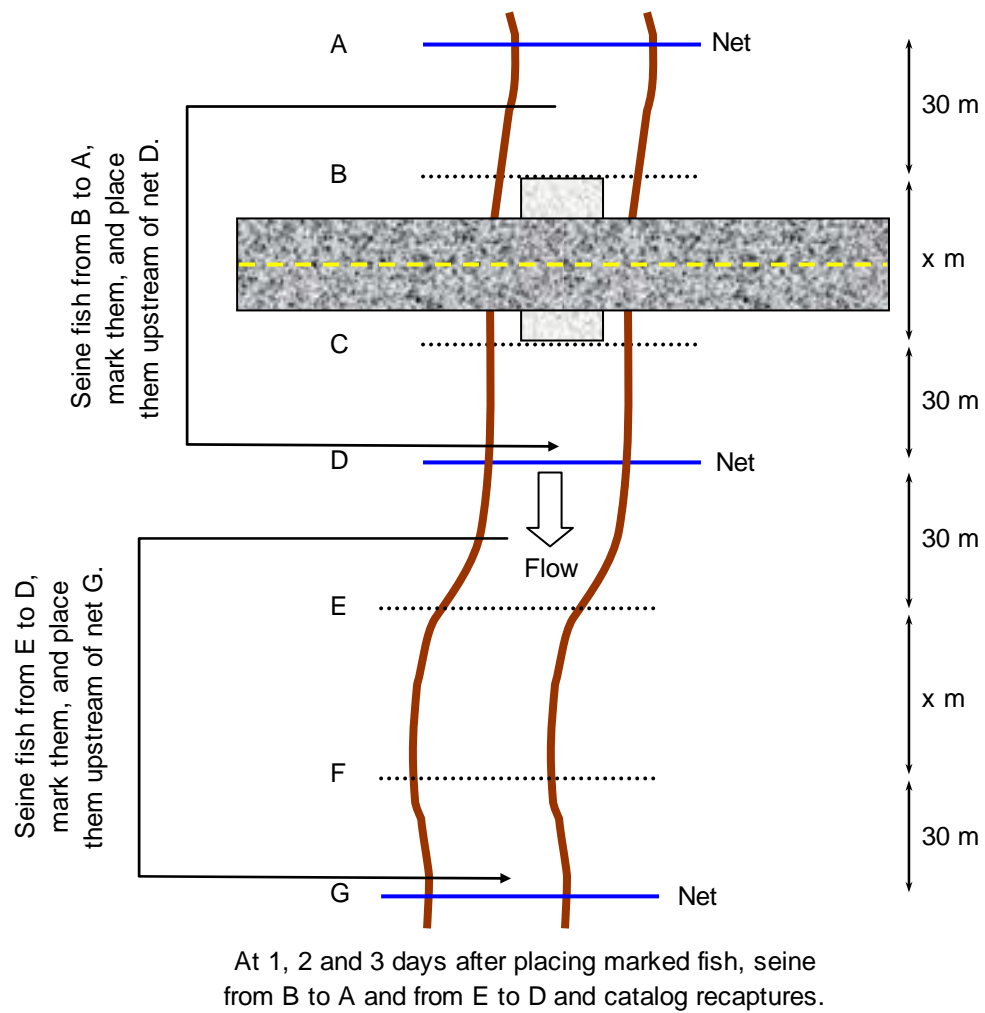


Figure 1. The mark-and-recapture experimental design to be used in the 2006 season.

Budget

Expenditures for this cycle are largely a result of stipends. The planned and actual expenses deviate slightly because tuition and fees for the Spring 2006 semester have not been fully processed yet.

